Darter Characin (*Characidium fasciatum*)

Ecological Risk Screening Summary

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1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2014):

"South America: São Francisco and upper Paraná River drainages in Brazil."

Status in the United States

No records of *Characidium fasciatum* in the United States were found.

Means of Introductions in the United States

No records of *Characidium fasciatum* in the United States were found.

Remarks

No additional remarks.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From Eschmeyer et al. (2017):

"***fasciatum, Characidium*** Reinhardt [J. T.] 1867:56, Pl. 2 (figs. 1-2) [Oversigt over det Kongelige Danske Videnskabernes Selskabs Forhandlinger og dets Medlemmers Arbeider (Kjøbenhavn) 1866] Near Lagoa Santa, Brazil. Lectotype: ZMUC P241103 [ex ZMUC 91]. Paralectotypes: ?BMNH 1868.7.8.5 (1); MNHN 0000-9592 [ex ZMUC] (2); NMW 62437 (2); ZMUC P241104-5 [ex 92-93] (2), P241106-8 [ex 99-101] (3), P241109-11 [ex 104-106] (3); ZMB 9188 (1). Type catalog: Bertin 1948:36, Nielsen 1974:47. Lectotype established by Buckup 1992:1066 not by Nielsen; but the lectotype is the described specimen and Nielsen's holotype; Buckup refers some paralectotypes to other species. •Valid as *Characidium fasciatum* Reinhardt 1867 -- (Ortega & Vari 1986:7, Buckup 1992, see Malabarba 1989:131, Buckup 1993:101, Gómez & Chebez 1996:56, Sverlij et al. 1998:37 dated 1866, Buckup et al. 2000:276, Britski 2001:20, Buckup in Reis et al. 2003:89 dated 1866, Menni 2004:79 as cf. fasciatum, Taphorn et al. 2006:5, da Graça & Pavanelli 2008:55, Silveira et al. 2008:169, Lujan et al, 2013:456, Zanata & Camelier 2014:340, Litz & Koerber 2014:16, Sarmiento et al. 2014:185, Casciotta et al. 2015:1, Melo & Oyakawa 2015:287, Mendonça & Netto-Ferreira 2015:192, Zanata & Ohara 2015:375, Zanata & Camelier 2015:497, Zanata et al. 2015:381 Koerber & Litz 2016:3). **Current status:** Valid as *Characidium fasciatum* Reinhardt 1867."

From ITIS (2016):

"Taxonomic Standing: Current Status: valid"

"Kingdom Animalia
Subkingdom Bilateria
Infrakingdom Deuterostomia
Phylum Chordata
Subphylum Vertebrata
Infraphylum Gnathostomata
Superclass Osteichthyes
Class Actinopterygii
Subclass Neopterygii
Infraclass Teleostei
Superorder Ostariophysi
Order Characiformes
Family Characidae
Genus *Characidium*
Species *Characidium fasciatum* Reinhardt, 1867"

Size, Weight, and Age Range
From Froese and Pauly (2014):

"Max length: 6.7 cm SL male/unsexed; [Riehl and Baensch 1991]"

Environment
From Froese and Pauly (2014):

"Freshwater; benthopelagic; pH range: 5.6 - 7.5; dH range: ? - 25."

"Found in lentic environment [Cordiviola de Yuan and Pignalberi de Hassan 1985]."

Climate/Range
From Froese and Pauly (2014):

"Subtropical; 18°C - 24°C [Riehl and Baensch 1991]"

Distribution Outside the United States
Native
From Froese and Pauly (2014):

"South America: São Francisco and upper Paraná River drainages in Brazil."

Introduced
No records of *Characidium fasciatum* introductions were found.

Means of Introduction Outside the United States
No records of *Characidium fasciatum* introductions were found.

Short Description
From Buckup (1992):

"Body elongate, moderately compressed. Dorsal profile convex, strongly arched between anterior tip of mesethmoid bone and posterior margin of the telencephalon; nearly straight between posterior margin of frontal bones and dorsal fin origin; straight, slightly slanted posteriorly at dorsal-fin base; straight, nearly parallel to body axis between bases of dorsal and caudal fins. Ventral profile moderately convex, evenly arched, but strongly slanted anteriorly between lower lip and area below pectoral fins; straight or slightly arched between pectoral fins and anal fin origin; straight, posteriorly slanted at anal fin base; straight, slightly slanted posteriorly between anal and caudal fins.

Snout distinctly blunt, short, and elevated. Jaws correspondingly short. Maxilla short and wide. Eyes small, their horizontal diameter equal or slightly larger than snout length. Rim of nares poorly developed.

Dentary teeth in two rows. Outer dentary teeth 6-9*; anterior 3-4 conspicuously tricuspid and larger than remaining teeth, their lateral cusps one-third to one-half the length of median cusp. Inner row with several minute conic teeth. Premaxillary teeth 5*-7, conic or weakly tricuspid. Maxillary teeth absent. Ectopterygoid teeth present, but uncountable on radiographs.

Branchiostegal rays 5. Gill rakers (of lectotype) 6 on dorsal limb, 8 on ventral limb of anterior branchial arch. Supraorbital bones very narrow, S-shaped. Parietal branch of supraorbital canal extending into parietal bone. Parietal fontanel limited anteriorly by frontal bones.

Scales cycloid, 14-25* radii on posterior field of scales above anterior portion of lateral line. Lateral line complete. Lateral line scales 36(1), 37*(3). Scales between medial predorsal series and lateral line 4(1), 5*(3); scales between medial ventral series and lateral line 4*(4). Scale series around caudal peduncle 14*(4). Predorsal scales 10(2), 11*(1), 13(1). Isthmus naked; naked area extending to base of pectoral fins; along midventral line naked area extending beyond cleithraljoint for a distance approximately equivalent to two midventral scales.

Dorsal-fin rays 11(1), 12(2); unbranched rays on leading portion of fin 3(1) (fin origin damaged in lectotype); last ray not split to its base. Adipose fin present. Anal-fin rays 8*(2), 9(2); unbranched rays on leading portion 3(1); adnate rays counted as a single ray on posterior edge of fin 1(1), 2*(2). Preceding fin-ray counts made with help of radiographs, in order to confirm number of rays embedded in skin at base of leading edge and number of pterygiophores associated with posterior rays. Pectoral-fin rays 11 *(4); unbranched rays on leading edge 3(1); longest ray reaching base of third scale preceding pelvic fin in lectotype. Pelvic-fin rays 9*(4); a single unbranched ray on leading edge (1); longest ray reaching anal opening. Branched caudal-fin rays 9*(2) on dorsal lobe, 8*(2) on ventral lobe."

Biology

From Froese and Pauly (2014):

"Ratio of digestive tube length/standard length: 0.7. Perform the sit-and-wait predation in which the fishes remain among the rocks and use their paired fins to rest on the bottom. They visually inspect the nearby substrate areas and, whenever a prey is detected, they swim towards it very fast, thrust against the substrate and grab it with their mouths [Casatti and Castro 1998]."

From de Castro and Carvalho (2014):

"*Characidium fasciatum* and *Geophagus brasiliensis*, during the dry and rainy periods consumed primarily aquatic insects, at 79.6% and 49.0%, respectively."

Human Uses

From Froese and Pauly (2014):

"Aquarium: commercial"

Diseases

No information on diseases of *Characidium fasciatum* was found.

Threat to Humans

From Froese and Pauly (2014):

"Harmless"

3 Impacts of Introductions

No records of *Characidium fasciatum* introductions were found.

4 Global Distribution

Figure 1. Known global distribution of *Characidium fasciatum*. Map created with data from VertNet (2017).

Figure 2. Known global distribution of *Characidium fasciatum*. Map from GBIF Secretariat (2017).

5 Distribution Within the United States

No records of *Characidium fasciatum* in the United States were found.

6 Climate Matching

Summary of Climate Matching Analysis

The climate match for *Characidium fasciatum* was high in Florida and along the Gulf Coast. The match was medium for most of the south Atlantic and Gulf Coastal states and low everywhere else. The Climate 6 score (Sanders et al. 2014; 16 climate variables; Euclidean distance) for the Continental U.S. was 0.054, medium, and individually high in Alabama, Florida, Georgia, Louisiana, Mississippi, South Carolina, and Texas.

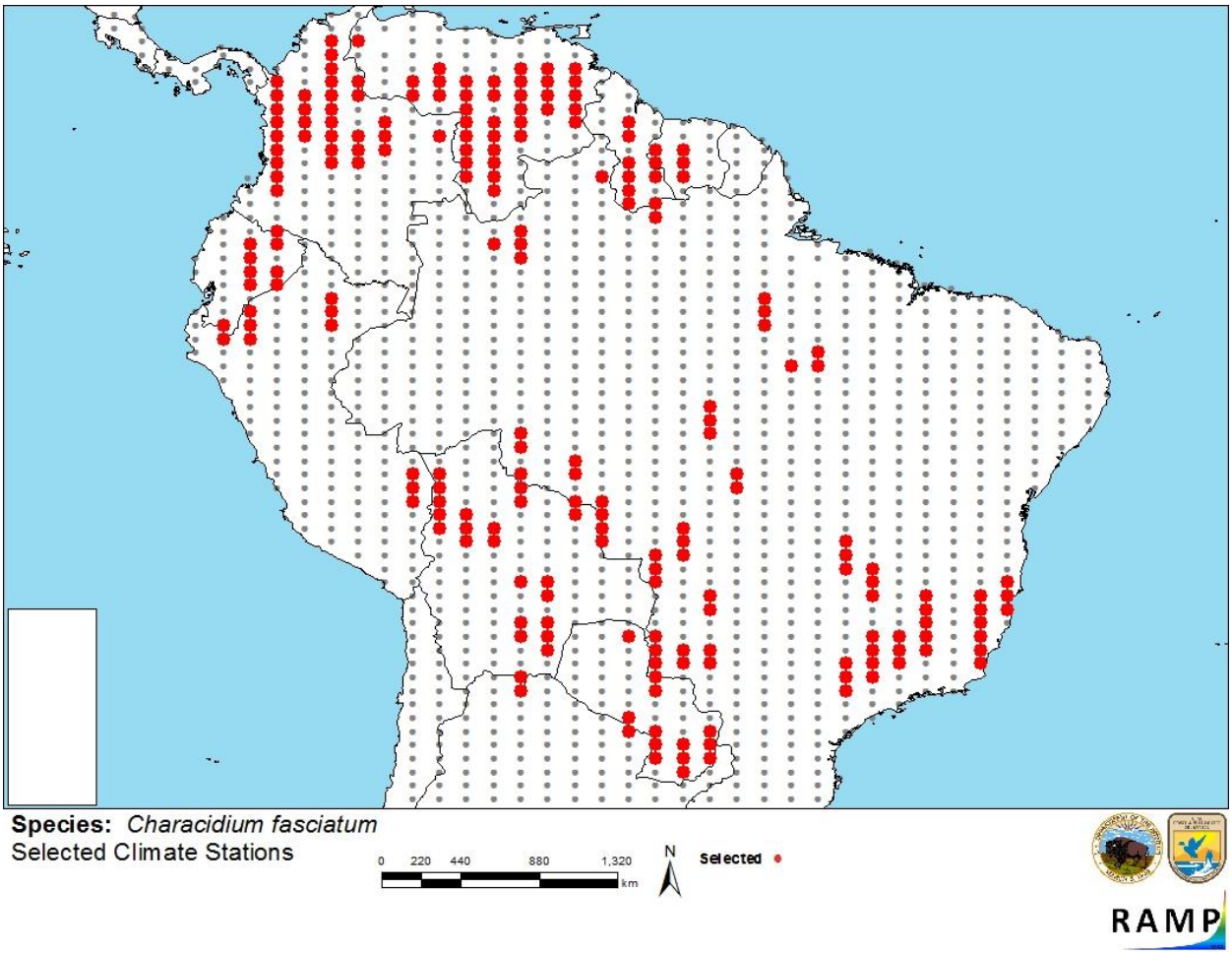

Figure 3. RAMP (Sanders et al. 2014) source map showing weather stations selected as source locations (red) and non-source locations (grey) for *Characidium fasciatum* climate matching. Source locations from GBIF Secretariat (2017) and VertNet (2017).

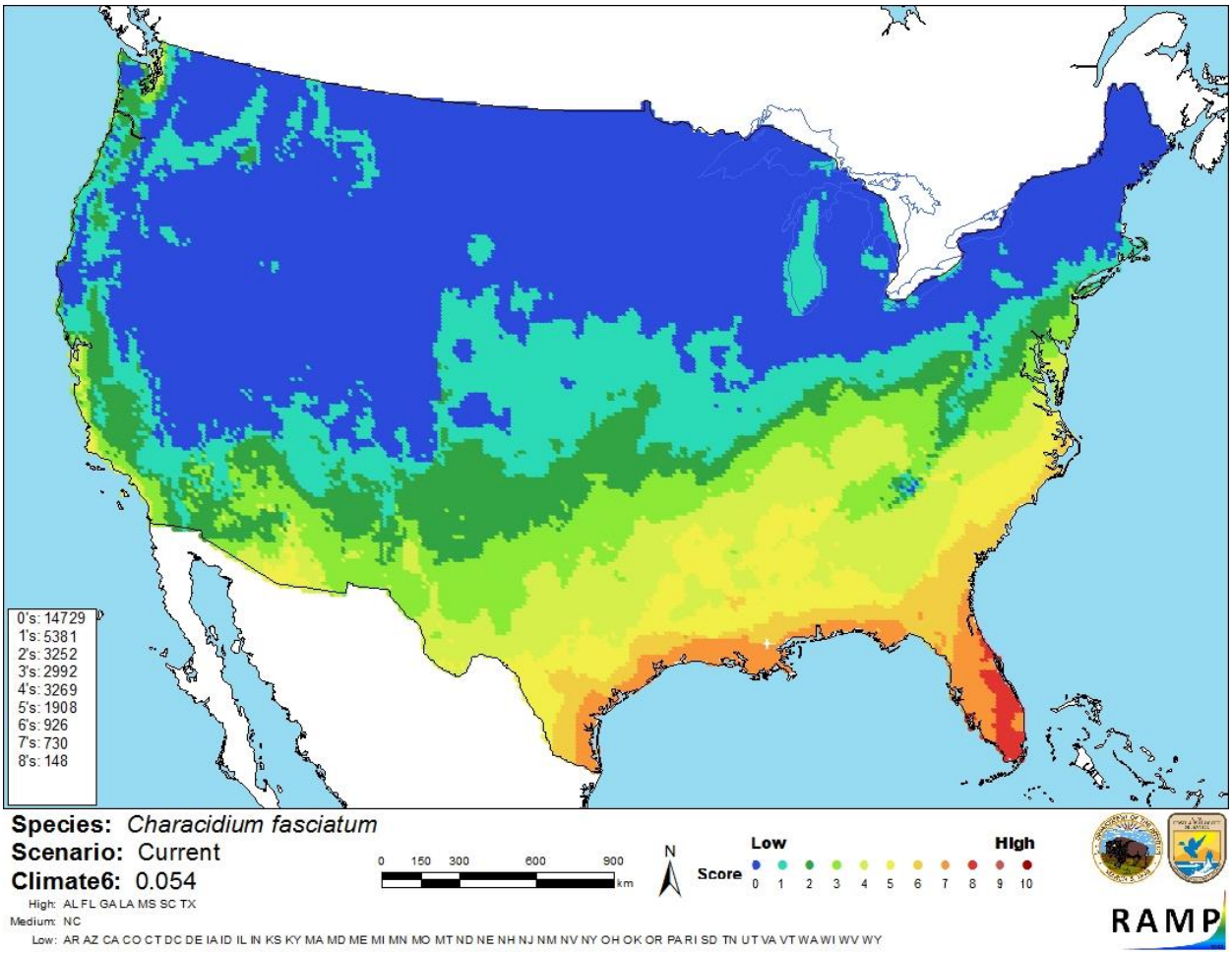

Figure 4. Map of RAMP (Sanders et al. 2014) climate matches for *Characidium fasciatum* in the continental United States based on source locations reported by GBIF Secretariat (2017) and VertNet (2017). 0 = Lowest match, 10 = Highest match.

The High, Medium, and Low Climate match Categories are based on the following table:

Climate 6: Proportion of (Sum of Climate Scores 6-10) / (Sum of total Climate Scores)	Climate Match Category
$0.000 \leq X \leq 0.005$	Low
$0.005 < X < 0.103$	Medium
≥ 0.103	High

7 Certainty of Assessment

The certainty of this assessment is medium. Minimal information was available about *Characidium fasciatum*. No records of introductions were found.

8 Risk Assessment

Summary of Risk to the Contiguous United States

The history of invasiveness is uncertain. No records of introductions were found. The climate match is medium, with the highest areas of match in Florida and along the Gulf Coast. The certainty of assessment is low. The overall risk assessment category is uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 3): Uncertain**
- **Climate Match (Sec. 6): Medium**
- **Certainty of Assessment (Sec. 7): Medium**
- **Remarks/Important additional information** No additional remarks.
- **Overall Risk Assessment Category: Uncertain**

9 References

Note: The following references were accessed for this ERSS. References cited within quoted text but not accessed are included below in Section 10.

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10 References Quoted But Not Accessed

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